

REMARKS

Claims 1 to 69 are in the case. Amendments have been made to claims 1 and 17. Claim 19 has been deleted. A copy of all the claims in the case as amended by this response is attached for the convenience of the Examiner.

Claim 1 has been amended to specify that the hydrocarbon-containing fuel is selected from the group consisting of gasoline and diesel. This subject matter is found in claim 19 of the application as filed, which claim has been deleted.

Claim 17 has been amended to correct its dependency to claim 15, in place of claim 14.

Rejection under 35 U.S.C. § 102

Claims 1 to 3, 5 to 7, 9, 11, 19, 32 to 35, 38, 41 and 44 of this application stand rejected under 35 U.S.C. § 102(b) as being anticipated by Killick (WO95/02654). This rejection is respectfully traversed.

Claim 1 is directed to a fuel composition comprising a hydrocarbon fuel (now gasoline or diesel as amended) and an oxygen-containing component. The oxygen-containing component is present in sufficient amounts to provide oxygen for the combustion of the fuel. The oxygen-containing component has a major oxygen-providing agent having the general formula (I) defined in claim 1. The term "major oxygen-providing agent" as used in claim 1 is defined in the specification at lines 1 to 5 of page 8. The oxygen-providing agent is a compound capable of providing oxygen during the conditions prevailing in the combustion chamber of an engine to which the fuel is fed. This means of oxygen provision is contrasted with oxygen provided by an oxygen-containing gas, typically air, which is not part of the fuel composition, but

supplied to the engine separately. The compound of formula (I) is the source of the major portion, if not all, of the oxygen provided in this manner.

Turning to Killick, this document is concerned with a fuel blend including a hydrocarbon liquid and up to 20% ethanol and/or n-propanol. The fuel blend also contains up to 15% by volume of a fatty acid and/or organic ester. The Examiner refers to a number of the examples in Killick, all of which describe fuel blends comprising ethyl acetate. In all cases, the ethyl acetate is present in the blend in only relatively small amounts (from 2.5% to 5.0%) together with much larger volumes of ethanol (15%). It will be appreciated that the fuel blend of Killick has an alcohol, such as ethanol, as the major oxygen-providing agent. The ethyl acetate is present only in minor amounts and, as such, is not the major oxygen-providing agent in the blend. It is made clear in the specification of Killick at lines 22 to 25 of page 2 that the ethyl acetate is present as a coupling agent, in order to ensure that the alcohol and fuel remain in a single phase. Killick is not using the acetate as a source of oxygen, in particular as the major oxygen-providing agent.

For the above reasons, it is submitted that the fuel blend of claim 1 is not anticipated by Killick. Claims 2 to 44, being dependent from claim 1, are also not anticipated by Killick.

Claims 1, 6, 14, 19, 32 to 34, and 38 to 40 of this application stand rejected under 35 U.S.C. § 102(b) as being anticipated by Sieg (US Patent 3,903,251). This rejection is respectfully traversed.

Sieg is concerned with a process for producing a high octane unleaded gasoline. The process comprises oxidizing isobutane to form tertiary butyl alcohol. The process relies upon the use of acetic acid in this reaction, the bulk of which is removed in a subsequent separation step. Any remaining acetic acid in the mixture of tertiary butyl alcohol and water is present only in very minor amounts, as indicated in lines 1 to 8 of column 7. This small amount of acetic acid is converted by esterification into butyl

acetate. The resulting mixture of water and butyl alcohol contains only a few tenths percent of butyl acetate (typically 0.5%). This mixture is then blended with gasoline to produce the high octane fuel.

The major oxygen-providing agent in the fuel blend of Sieg is tertiary butyl alcohol. It is this component that is responsible for the high octane number of the fuel produced in the process. Any acetate in the mixture is only present in the final fuel blend in extremely small quantities. The acetate is not the major oxygen-providing agent in the final fuel blend. In this respect, the fuel blend of Sieg is to be contrasted with the fuel blend of claim 1 of this application and its dependent claims.

For the above reasons, it is submitted that the fuel blend of claim 1 is not anticipated by Sieg. Claims 2 to 40, being dependent from claim 1, are also not anticipated by Sieg.

Claims 1 to 3, 5 to 11, 14, 19, 32 to 35, and 43 to 44 of this application stand rejected under 35 U.S.C. § 102(b) as being anticipated by Smith (US Patent 4,394,133). This rejection is respectfully traversed.

Smith is directed to the use of alkyl acetates as phase separation inhibitors in fuels containing hydrocarbons and ethanol. At lines 36 to 39 of column 2 Smith indicates that the fuel is most likely gasoline and the mixture contains from 80 and 99 percent gasoline and from 1 to 20 percent ethanol. The amount of inhibitor that is present in the fuel mixture is dependent upon the percentage of water present in the fuel. Example 1 of Smith concerns a gasohol product containing 90 percent gasoline and 9.59 percent ethanol. The inhibitor was present in amounts of 0.1 and 0.4 %.

It is clear that the fuel composition of Smith contains an inhibitor, such as an acetate, only in sufficient amounts to prevent phase separation occurring. Accordingly, the fuel contains only very low amounts of the acetate, in relation to the amount of alcohol present. It follows that the acetate present in the fuel of Smith is not the major

oxygen-providing agent of the fuel mixture. The major oxygen provider is the alcohol, especially ethanol. Accordingly, the fuel composition of Smith does not meet the requirements of claim 1 of the present application, as amended.

For these reasons, it is submitted that the fuel blend of claim 1 is not anticipated by Smith. Claims 2 to 44, being dependent from claim 1, are also not anticipated by Smith.

Claims 1 to 4, 6 to 8, 11, 19, 32 to 34, and 43 to 44 of this application stand rejected under 35 U.S.C. § 102(b) as being anticipated by Mayerhoff (US Patent 3,869,262). This rejection is respectfully traversed.

Mayerhoff is directed to fuel compositions containing oxygen-containing hydrocarbon compounds of a given formula (see the abstract of Mayerhoff). Mayerhoff teaches specifically that the fuel composition should comprise at least 3 oxygen-containing compounds, in particular at least one acetal, and at least 2 further compounds selected from acetals, alcohols and acetates. Reference is made to Mayerhoff at lines 55 to 67 of column 5. The Examiner refers to Examples 9 and 10 of Mayerhoff. These examples relate to a fuel mixture containing an additive consisting of 30 parts of methanol, 20 parts of methylal, 30 parts of methylacetate and 20 parts of isopropanol. It is clear that the fuel mixture of Mayerhoff, while it may contain an acetate, contains significant amounts of other oxygenate compounds, such as alcohols. In the case of Examples 9 and 10, the 30 parts of methyl acetate are accompanied by 50 parts of alcohol and a further 20 parts of methylal. Accordingly, it can be seen that, again, Mayerhoff is not using the acetate as the major oxygen-providing agent in the additive or fuel composition. On the contrary, Mayerhoff is teaching that the acetate must be accompanied by greater amounts of other oxygenate compounds.

For these reasons, it is submitted that the fuel blend of claim 1 is not anticipated by Mayerhoff. Claims 2 to 44, being dependent from claim 1, are also not anticipated by Mayerhoff.

Claims 1 to 3, 4 to 7, 9, 11, 19, 32 to 35, 38 to 40, and 43 to 44 of this application stand rejected under 35 U.S.C. § 102(b) as being anticipated by Tunison (US Patent 1,423,048). This rejection is respectfully traversed.

Tunison is concerned with providing fuel compositions using as a basic ingredient heavy oil. This heavy oil is the product remaining after the distillation of a crude oil to produce the conventional fuel fractions, such as gasoline. Reference is made to Tunison at lines 94 to 106 of column 1. To render this heavy oil useful as a fuel, Tunison blends it with more volatile components, such as ethers, alcohols and esters. Examples 2 and 3 of Tunison, referred to by the Examiner, contain significant quantities of alcohols as the major oxygen-providing component. Clearly, this fuel blend does not fall within the scope of claim 1 of this application. Example 6 relied upon by the Examiner discloses a fuel consisting of just heavy oil and ethyl acetate. Claim 1 as amended is limited to fuel blends in which the hydrocarbon fuel is gasoline or diesel. Claim as amended does not include fuel compositions such as those of Example 6 of Tunison, having heavy oil as the hydrocarbon fuel component. Indeed, Tunison is teaching how to use heavy oils to replace such fuels as gasoline and diesel.

For these reasons, it is submitted that the fuel blend of claim 1 is not anticipated by Tunison. Claims 2 to 44, being dependent from claim 1, are also not anticipated by Tunison.

Claims 1 to 13, 20 to 21, 24, 32 to 35, 38 to 40, 43 to 44 and 65 to 67 of this application stand rejected under 35 U.S.C. § 102(b) as being anticipated by Wuff (US Patent 6,287,351 B1). This rejection is respectfully traversed.

Wuff discloses a dual fuel composition including acetylene. Referring to the description of the invention of Wuff from line 47 of column 4 to line 25 of column 5, Wuff employs a two-stage ignition system for the engine operating on the fuel composition. In the first stage, a secondary fuel, also referred to as a first combustible component, is used for ignition purposes. This fuel is disclosed as being an alcohol, an

ether or a low molecular weight ester. Wuff discloses that these components are used essentially pure as the fuel. In the alternative, the secondary fuel may gasoline or a gasoline blend. However, Wuff does not teach or contemplate the use of gasoline blended with one or more of the aforementioned compounds. It is clear that Wuff considers these fuels to be alternatives for use as the secondary fuel component.

Once ignition has been achieved, a primary fuel is used to power the engine. As noted, this primary fuel is based upon acetylene, possibly in combination with one or more of the aforementioned oxygenate compounds.

Claim 1 of this application as amended is limited to compositions comprising gasoline or diesel as the hydrocarbon fuel. Wuff does not teach or suggest a fuel composition comprising gasoline or diesel in combination with an oxygen-containing component, in which the major oxygen-providing agent is a compound as defined in claim 1 of this application.

For these reasons, it is submitted that the fuel blend of claim 1 is not anticipated by Wuff. Claims 2 to 44, being dependent from claim 1, are also not anticipated by Wuff.

Claim 65 of this application is directed to a specific blend of esters for use as a fuel additive. Wuff discloses nothing which teaches or suggests the use of such a blend of esters having the general formula defined in claim 65 as a fuel or fuel additive.

For these reasons, it is submitted that the additive of claim 65 is not anticipated by Wuff. Claims 66 and 67, being dependent from claim 65, are also not anticipated by Wuff.

Claims 1 to 13, 20 to 21, 24, 32 to 35, 38 to 40, 43 to 44 and 65 to 67 of this application stand rejected under 35 U.S.C. § 102(b) as being anticipated by Wuff (US Patent 6,076,487). This rejection is respectfully traversed.

Wuff is directed to an acetylene fuel and its use in an internal combustion engine. The teaching of Wuff is limited to acetylene as a fuel, or acetylene in admixture with one or more compounds, such as alcohols, ethers and esters. In contrast, claim 1 of this application as amended is limited to fuels in which the hydrocarbon component is gasoline or diesel. There is nothing in Wuff which teaches or suggests a fuel composition in which gasoline or diesel are blended with an oxygen containing additive in which the major oxygen-providing agent is a compound as defined in claim 1.

For these reasons, it is submitted that the fuel blend of claim 1 is not anticipated by Wuff. Claims 2 to 44, being dependent from claim 1, are also not anticipated by Wuff.

Claim 65 of this application is directed to a specific blend of esters for use as a fuel additive. Wuff discloses nothing which teaches or suggests the use of such a blend of esters having the general formula defined in claim 65 as a fuel or fuel additive.

For these reasons, it is submitted that the additive of claim 65 is not anticipated by Wuff. Claims 66 and 67, being dependent from claim 65, are also not anticipated by Wuff.

Claims 1 and 15 to 18 of this application stand rejected under 35 U.S.C. § 102(b) as being anticipated by or in the alternative under 35 U.S.C. § 103(a) as obvious over Dorer (US Patent 3,658,495). This rejection is respectfully traversed.

Dorer is concerned with compositions for use a fuels and cleaning agents for fuel systems comprising a combination of oxy compounds and ashless dispersants. Dorer teaches that the fuel composition may comprise a wide range of oxy compounds, in particular polyglycols and their carboxylic acid esters or ethers. Dorer is concerned solely with including in the fuel composition components which are effective in cleaning engine components, in particular the fuel system. The nature and amount of these

components is dictated solely by this function to be performed by the final fuel mixture. There is nothing in Dorer which teaches or suggests the fuel composition of claim 1, as amended. In particular, there is no teaching or suggestion of a fuel composition comprising gasoline or diesel with an oxygen containing additive in which the major oxygen-providing agent for the purposes of combustion of the hydrocarbon fuel is one or more compounds of the general formula given in claim 1. Indeed, Dorer appears totally unconcerned with the combustion properties of the mixture being disclosed. This is confirmed by the fact that the mixture may be used solely as a cleaning agent, as stated at lines 45 to 47 of column 1.

For these reasons, it is submitted that the fuel blend of claim 1 is not anticipated or rendered obvious by Dorer. Claims 15 to 18, being dependent from claim 1, are also not anticipated or rendered obvious by Dorer.

Rejection under 35 U.S.C. § 103

Claims 38 to 40 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Killick (WO 95/02654). This rejection is respectfully traversed.

As noted above, the fuel blends of Killick contain major amounts of an alcohol, typically ethanol. This alcohol is the major oxygen-providing agent of the fuel blend itself. As noted by the Examiner, Killick also indicates that additional alcohols, such as methanol, butanol etc. may also be included in the blend. The addition of such further alcohols would serve to remove the fuel blends of Killick even further from those of the present invention. The major oxygen-providing agent of the fuel blends of claims 38 to 40 is an ester having the general formula (I) as defined in claim 1, from which claims 38 to 40 depend. The addition of a further alcohol to the fuel blend of Killick, as taught, would merely serve to reduce the proportion of oxygen derived from the ester still further, distancing the resulting blend from those of claims 1 and 38 to 40.

For these reasons, it is submitted that the fuel blends of claims 38 to 40 are not rendered obvious by Killick.

Claim 42 is rejected under 35 U.S.C. § 103(a) as being unpatentable over Killick (WO 95/02654) and Dorer (US Patent 3,658,495) as applied to claims 1 and 15 to 18 and further in view of Gyimah (US Patent No. 5,302,595). This rejection is respectfully traversed.

Gyimah relates to certain compounds and their use as biocides. A great range of possible uses for the compounds is disclosed in Gyimah, in particular in columns 8 to 11. A number of fuels are indicated in column 9 as being possible applications for the compounds. No details are given regarding the fuels, in particular regarding their composition and nature. In particular, there is no teaching or suggestion in Gyimah that any of the compounds disclosed could in any way be useful as biocides in compositions containing gasoline or diesel and significant quantities of ester oxygenating compounds as defined by the formula of claim 1 of this application. It is nowhere taught or suggested that the biocides of Gyimah could remain active as biocides in such a specific environment.

Accordingly, for these reasons and the reasons given above for the patentability of claims 1 and 15 to 18, it is submitted that claim 42 is not obvious in the light of Gyimah.

Rejection under 35 U.S.C. § 112

Claim 17 is rejected under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. This rejection is respectfully traversed.

Claim 17 has been amended to depend from claim 15, in place of claim 14. Claim 17 specifically defines the groups R_3 and R_4 . Claim 15 does not recite a formula

containing these two groups. However, claim 15 in turn depends from claim 1, in which the formulae including the groups R_3 and R_4 are clearly indicated.

It is submitted that the amendment to the dependency of claim 17 overcomes the rejection based on the indefiniteness of the claim.

Allowable Subject Matter

We are pleased to note the findings of the Examiner regarding allowable subject matter in this case. In particular, we note the subject matter of claims 22 to 23, 25 to 31, 36 to 37 and 45 to 64 is allowable.

Prior Art

We note the Examiner refers to a number of prior art documents as being pertinent to the present invention. However, none of the documents teaches or suggests a fuel composition as defined in claim 1 or the fuel additives as claimed in which one or more compounds of the formulae given in the claims are present as the major oxygen-providing agent of the fuel composition.

Applicant submits that amendment of the claims as set out above renders the claims of this application directed to allowable subject matter. Accordingly, reconsideration and withdrawal of all outstanding rejections and allowance of the claims at an early date are hereby respectfully requested.

Respectfully Submitted,

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CERTIFICATE OF MAILING 31 CFR 1.8(a)

I hereby certify that this correspondence along with any referred to as attached or enclosed is being deposited with the US Postal Service as First Class mail, postage prepaid in an envelope addressed to: Assistant Commissioner of Patents and Trademarks, Washington, D.C. 20231 on the 16th day of October 2002.

Signature



Michael P. Hartmann

Marked Up Claims

1. (Once Amended) A fuel blend for use in an internal combustion engine, the fuel blend comprising:

a hydrocarbon-containing fuel component selected from the group consisting of gasoline and diesel;

an oxygen-containing component capable of providing oxygen for combustion of the fuel component under conditions prevailing during the combustion cycle of the internal combustion engine;

wherein the major oxygen-providing agent of the oxygen-containing component is one or more compounds having the general formula (I):



wherein R_1 is selected from hydrogen, lower alkyl, lower alkenyl and lower alkynyl groups;

R_2 is selected from lower alkyl, lower alkenyl and lower alkynyl groups, or a group having the general formula (II):



wherein R_3 is selected from lower alkyl, lower alkenyl and lower alkynyl groups; and

R_4 is selected from lower alkyl groups.

2. A fuel blend as claimed in claim 1, wherein R_1 is selected from hydrogen, C_1 or C_2 alkyl, C_2 alkenyl and C_2 alkynyl groups.

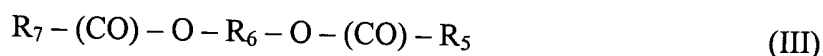
3. A fuel blend as claimed in claim 2, wherein R_1 is selected from hydrogen, C_1 or C_2 alkyl.

4. A fuel blend as claimed in claim 3, wherein R_1 is methyl.
5. A fuel blend as claimed in claim 3, wherein R_1 is ethyl.
6. A fuel blend as claimed in claim 1, wherein R_2 is selected from C_1 to C_4 alkyl, C_2 alkenyl and C_2 alkynyl groups.
7. A fuel blend as claimed in claim 6, wherein R_2 is C_1 or C_2 alkyl.
8. A fuel blend as claimed in claim 7, wherein R_2 is methyl.
9. A fuel blend as claimed in claim 7, wherein R_2 is ethyl.
10. A fuel blend as claimed in claim 1, wherein the compound of general formula (I) is methyl acetate.
11. A fuel blend as claimed in claim 1, wherein the compound of general formula (I) is ethyl acetate.
12. A fuel blend as claimed in claim 1, wherein the compound of general formula (I) is methyl formate.
13. A fuel blend as claimed in claim 1, wherein the compound of general formula (I) is ethyl formate.
14. A fuel blend as claimed in claim 1, wherein the compound of general formula (I) is tertiary butyl acetate.
15. A fuel blend as claimed in claim 1, wherein R_2 is a group of general formula (II), in which R_3 is a C_1 to C_4 alkyl.

16. A fuel blend as claimed in claim 15, wherein R_4 is a C_1 to C_4 alkyl.
17. (Once Amended) A fuel blend as claimed in claim [14]15, wherein R_3 and R_4 are each independently selected from C_1 or C_2 alkyl.
18. A fuel blend as claimed in claim 1, in which the compound of general formula (I) is ethylene glycol diacetate.
19. DELETED.
20. A fuel blend as claimed in claim 1, wherein the major oxygen-providing component comprises a first compound of formula (I), in which R_2 is ethyl, and a second compound of formula (I), in which R_2 is methyl.
21. A fuel blend as claimed in claim 20, wherein both the first and second compounds are compounds in which R_1 is a C_1 to C_4 alkyl.
22. A fuel blend as claimed in claim 21, wherein the first compound and the second compound are present in a ratio of from 1:5 to 5:1.
23. A fuel blend as claimed in claim 21, wherein the first compound and the second compound are present in a ratio of from 1:1 to 1:1.5.
24. A fuel blend as claimed in claim 23, wherein the first compound is methyl acetate and the second compound is ethyl acetate.
25. A fuel blend as claimed in claim 1, wherein the major oxygen-providing component comprises a first compound of formula (I), in which R_2 is a group of general formula (II), and a second compound of formula (I), in which R_2 is a C_1 to C_4 alkyl.

26. A fuel blend as claimed in claim 25, wherein the first compound is a compound in which R_1 is a C_1 to C_4 alkyl.
27. A fuel blend as claimed in claim 26, wherein the second compound is a compound in which R_1 is a C_1 to C_4 alkyl.
28. A fuel blend as claimed in claim 27, wherein the first compound is ethylene glycol diacetate.
29. A fuel blend as claimed in claim 28, wherein the second compound is selected from methyl acetate, ethyl acetate and mixtures thereof.
30. A fuel blend as claimed in claim 25, wherein the first compound and second compound are present in a ratio of from 0.5:1 to 10:1.
31. A fuel blend as claimed in claim 30, wherein the first compound and second compound are present in a ratio of from 1:1 to 5:1.
32. A fuel blend as claimed in claim 1, further comprising a stabilizer.
33. A fuel blend as claimed in claim 32, wherein the stabilizer is selected from alcohols having from 1 to 8 carbon atoms.
34. A fuel blend as claimed in claim 33, wherein the stabilizer is selected from alcohols having from 2 to 5 carbon atoms.
35. A fuel blend as claimed in claim 34, wherein the stabilizer is ethanol.
36. A fuel blend as claimed in claim 32, wherein the compound of general formula (I) and the stabilizer are present in a ratio of from 20:1 to 150:1.

37. A fuel blend as claimed in claim 36, wherein the compound of general formula (I) and the stabilizer are present in a ratio of from 75:1 to 125:1.
38. A fuel blend as claimed in claim 1, further comprising an alcohol having from 2 to 5 carbon atoms and bearing one or more alkyl substituents.
39. A fuel blend as claimed in claim 38, wherein the alcohol is an alkyl substituted butyl alcohol.
40. A fuel blend as claimed in claim 39, wherein the alcohol is tertiary butyl alcohol.
41. A fuel blend as claimed in claim 38, wherein the alcohol and the compound of general formula (I) are present in a ratio of from 1:0.6 to 1:5.
42. A fuel blend as claimed in claim 1, further comprising a biocide.
43. A fuel blend as claimed in claim 1, wherein the hydrocarbon-containing fuel component is gasoline and the compound of general formula (I) is present in an amount sufficient to provide an oxygen-content in the fuel blend of 1 to 5 percent by weight.
44. A fuel blend as claimed in claim 1, wherein the hydrocarbon-containing fuel component is diesel and the compound of general formula (I) is present in an amount sufficient to provide an oxygen-content in the fuel blend of 1 to 10 percent by weight.
45. An oxygenating additive for a hydrocarbon-containing fuel comprising:
a first compound having a general formula (III):



wherein R_5 is selected from lower alkyl, lower alkenyl and lower alkynyl groups;
 R_6 is selected from lower alkyl; and

wherein R_7 is selected from lower alkyl, lower alkenyl and lower alkynyl groups;
and
a second compound having a general formula (IV):



wherein R_8 is selected from hydrogen, lower alkyl, lower alkenyl and lower alkynyl groups; and

R_9 is selected from lower alkyl, lower alkenyl and lower alkynyl groups.

46. An oxygenating additive as claimed in claim 45, wherein R_5 is selected from C_1 to C_4 alkyl.
47. An oxygenating additive as claimed in claim 46, wherein R_5 is methyl.
48. An oxygenating additive as claimed in claim 45, wherein R_6 is ethyl.
49. An oxygenating additive as claimed in claim 45, wherein R_7 is selected from C_1 to C_4 alkyl.
50. An oxygenating additive as claimed in claim 49, wherein R_7 is methyl.
51. An oxygenating additive as claimed in claim 45, wherein the compound of general formula (III) is ethylene glycol diacetate.
52. An oxygenating additive as claimed in claim 45, wherein R_8 is selected from hydrogen, and C_1 to C_4 alkyl.
53. An oxygenating additive as claimed in claim 52, wherein R_8 is methyl.

54. An oxygenating additive as claimed in claim 45, wherein R_9 is selected from C_1 to C_4 alkyl.
55. An oxygenating additive as claimed in claim 54, wherein R_9 is selected from methyl and ethyl.
56. An oxygenating additive as claimed in claim 45, wherein the compound of general formula (IV) is selected from methyl acetate and ethyl acetate and mixtures thereof.
57. An oxygenating additive as claimed in claim 45, wherein the compound of general formula (III) and the compound of general formula (IV) are present in a ratio of from 0.5:1 to 5:1.
58. An oxygenating additive as claimed in claim 57, wherein the compound of general formula (III) and the compound of general formula (IV) are present in a ratio of from 1:1 to 2.5:1.
59. An oxygenating additive as claimed in claim 45, further comprising a biocide.
60. An oxygenating additive as claimed in claim 45, further comprising a stabilizer.
61. An oxygenating additive as claimed in claim 60, wherein the stabilizer is selected from alcohols having from 2 to 5 carbon atoms.
62. An oxygenating additive as claimed in claim 61, wherein the stabilizer is ethanol.
63. An oxygenating additive as claimed in claim 60, wherein the ratio of the combined amounts of the compounds of general formulae (III) and (IV) to the stabilizer is from 20:1 to 150:1.

64. An oxygenating additive as claimed in claim 63, wherein the ratio of the combined amounts of the compounds of general formulae (III) and (IV) to the stabilizer is from 75:1 to 125:1.

65. An oxygenating additive for a hydrocarbon fuel comprising a first and a second compound, both the first and the second compounds having the general formula (I):



wherein R_1 in each of the first and the second compound is independently selected from hydrogen, lower alkyl, lower alkenyl and lower alkynyl groups; and

R_2 in each of the first and second compound is independently selected from lower alkyl, lower alkenyl and lower alkynyl groups.

66. An oxygenating additive as claimed in claim 65, wherein R_1 and R_2 in each of the first and second compounds are both independently selected from hydrogen, and lower alkyl groups.

67. An oxygenating additive as claimed in claim 66, wherein the first compound is methyl acetate and the second compound is ethyl acetate.

68. An oxygenating additive as claimed in claim 67, wherein methyl acetate and ethyl acetate are present in a ratio of from 1:2 to 2:1.

69. An oxygenating additive as claimed in claim 68, wherein methyl acetate and ethyl acetate are present in a ratio of 1:1.